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| APPLICATION NO.   | FILING DATE | FIRST NAMED INVENTOR  | ATTORNEY DOCKET NO.        | CONFIRMATION NO. |
|---|-------------|-----------------------|----------------------------|------------------|
| 10/652,647  | 08/28/2003  | LeRoy L. Whinnery JR. | SD-8466                    | 1670             |
| 20567   | 7590        | 04/05/2007            |                            |                  |
| SANDIA CORPORATION<br>P O BOX 5800<br>MS-0161<br>ALBUQUERQUE, NM 87185-0161 |             |                       | EXAMINER<br>COONEY, JOHN M |                  |
|   |             |                       | ART UNIT                   | PAPER NUMBER     |
|   |             |                       | 1711                       |                  |

| SHORTENED STATUTORY PERIOD OF RESPONSE | MAIL DATE  | DELIVERY MODE |
|--|------------|---------------|
| 3 MONTHS                               | 04/05/2007 | PAPER         |

**Please find below and/or attached an Office communication concerning this application or proceeding.**

If NO period for reply is specified above, the maximum statutory period will apply and will expire 6 MONTHS from the mailing date of this communication.

|                              |                                      |  |  |
|------------------------------|--------------------------------------|--|--|
| <b>Office Action Summary</b> | <b>Application No.</b><br>10/652,647 | <b>Applicant(s)</b><br>WHINNERY ET AL. |  |
|                              | <b>Examiner</b><br>John m. Cooney    | <b>Art Unit</b><br>1711                |  |

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

### Status

- 1) ☒ Responsive to communication(s) filed on 06 February 2007.
- 2a) ☐ This action is **FINAL**.                      2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

### Disposition of Claims

- 4) ☒ Claim(s) 1-10,12-18,39-59 and 64-66 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-10,12-18,39-59 and 64-66 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

### Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 28 August 2003 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

### Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All    b) ☐ Some \*    c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- \* See the attached detailed Office action for a list of the certified copies not received.

### Attachment(s)

- |  |   |
|--|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892)                     | 4) <input type="checkbox"/> Interview Summary (PTO-413)           |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____                                      |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08)          | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date _____  | 6) <input type="checkbox"/> Other: _____                          |

***Continued Examination Under 37 CFR 1.114***

A request for continued examination under 37 CFR 1.114, including the fee set forth in 37 CFR 1.17(e), was filed in this application after final rejection. Since this application is eligible for continued examination under 37 CFR 1.114, and the fee set forth in 37 CFR 1.17(e) has been timely paid, the finality of the previous Office action has been withdrawn pursuant to 37 CFR 1.114. Applicant's submission filed on 2-6-07 has been entered.

***Claim Rejections - 35 USC § 112***

The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

Claims 2-10 and 12-18 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Claims 2-10 and 12-18 recite the limitation "the light-weight polyisocyanurate foam structure of claim ..." in the preamble. There is insufficient antecedent basis for this limitation in the claims.

Claim 1 is directed towards a reaction mixture and does not provide the required antecedent basis for the further defined "light-weight polyisocyanurate foam structure" set forth in the claims that depend from it.

Art Unit: 1711

Claims 1-10, 12-18, 39-59, and 64-66 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

The term "bulk" in claims 1, 39, and 64 is a relative term which renders the claim indefinite. The term "bulk" is not defined by the claim, the specification does not provide a standard for ascertaining the requisite degree, and one of ordinary skill in the art would not be reasonably apprised of the scope of the invention. It can not be determined what filler materials are intended to be included and/or excluded by the term "bulk".

### ***Claim Rejections - 35 USC § 103***

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 1-10, 12-18, 39-59, and 64-66 are rejected under 35 U.S.C. 103(a) as being unpatentable over Hayash, Jr. et al.(3,673,128), alone, or in view of Fuzesi et al.(4,699,931) and/or Whinnery et al. TEPIC document (Whinnery et al.).

Hayash, Jr. et al. discloses preparations of oxazolidone-modified isocyanurate foams prepared by mixing and reacting polyisocyanates and epoxide resins in the presence of catalysts, surfactants, blowing agents inclusive of water and other

Art Unit: 1711

propellants, and additives meeting fillers as defined by applicants' claims (see abstract, column 2 line 10- column 8 line 50, as well as, the entire document). Hayash, Jr. et al. discloses combination of the epoxy resins and polyisocyanates in amounts meeting the ranges of combinational values set forth by applicants claims. Further, regarding the product-by-process recitations of applicants' claims, the resultant epoxy resin/polyisocyanate based foamed polymers of Hayash, Jr. et al. are of a formed structure having no apparent factually supported, non-obvious differences from the formed products of applicants' claims that burden is upon applicants' to demonstrate any unobvious differences in the product which may be evident based on the process recitations of the claims.

Hayash, Jr. et al. differs from applicants' claims in that combinations of tertiary amine catalysts inclusive of cyclic amines are not required or, specifically, blends of 2,4,6-tris(dimethylaminomethyl)phenol and N,N-dimethylcyclohexylamine and/or relative amounts values as claimed. However, Hayash, Jr. et al. (see column 7 lines 47 and 55) discloses employment of these compounds in the preparations of Hayash, Jr. et al. for the purpose of imparting their reaction catalyzing effects. Accordingly, it would have been obvious for one having ordinary skill in the art to have employed the disclosed 2,4,6-tris(dimethylaminomethyl)phenol and N,N-dimethylcyclohexylamine catalyst of Hayash, Jr. et al. in combinations of varied respective individual contents within the teachings of Hayash, Jr. et al. for the purpose of imparting their disclosed reaction catalyzing effects in order to arrive at the products of applicants' claims with the expectation of success in the absence of a showing of new or unexpected results.

Art Unit: 1711

Additionally, regarding the blending of the tertiary amine with the cyclic amine, it has been held that is prima facie obvious to combine two compositions, each of which is taught by the prior art to be useful for the same purpose, in order to form a third composition to be used for the very same purpose. *In re Kerkhoven* 205 USPQ 1069. The idea for combining said compositions flows logically from their having been individually taught in the prior art. *In re Crockett* 126 USPQ 186, 188. Relatedly, the fact that a first component is in no way related to the second component, but where each has the same utility, does not detract from the obviousness of combining them. *In re Linder*, 457 F.2d 506, 507 (CCPA 1972). (Holding that it would have been obvious to combine two known dispersants, since one skilled in the art would have expected a mixture of such dispersants to also be a dispersant).

Hayash, Jr. et al. differs from applicants' claims in that glycidyl ethers of Bisphenol A or F are not particularly required. However, Hayash, Jr. et al. indicates these materials to be acceptable members of one of the preferred groups of members used in the practice of their invention(see column 4 line 32-34 and column 6 lines 69-70). Accordingly, it would have been obvious for one having ordinary skill in the art to have employed glycidyl ethers of Bisphenol A or F disclosed by Hayash, Jr. et al. in the making of the preparations of Hayash, Jr. et al. for the purpose of imparting their epoxy resin functional effect in order to arrive at the products of applicants' claims with the expectation of success in the absence of a showing of new or unexpected results. It is prima facie obvious to substitute equivalents, motivated by the reasonable expectation that the respective species will behave in a comparable manner or give comparable

Art Unit: 1711

results in comparable circumstances. *In re Ruff* 118 USPQ 343; *In re Jeze* 158 USPQ 99; the express suggestion to substitute one equivalent for another need not be present to render the substitution obvious. *In re Font*, 213 USPQ 532. Additionally, though epichlorohydrin is not particularly recited to be the species used in the glycidylation of the polynuclear phenols of Hayash, Jr. et al. such is not seen to be a point of distinction as Hayash, Jr. et al. recites their materials to be glycidyl ethers and difference based on the formed epoxy resin is not seen or demonstrated in fact. Regardless, column 5 lines 3-5 of Hayash, Jr. et al. demonstrates epichlorohydrin to be a conventional means of converting non-fused phenols to glycidyl ethers. Accordingly, employment of this species in the making of the Bisphenol glycidyl ethers of Hayash, Jr. et al. with the expectation of success in the absence of a showing of new or unexpected results.

Hayash, Jr. et al. further differs from applicants' claims in that particular fillers/additives as claimed are not particularly employed. However, Hayash, Jr. et al. does disclose the employment of additives in their preparations (column 8 lines 37-40), and Fuzesi et al. (see column 11 line 63 – column 12 line 2) and Whinnery et al. (pages 8-10) disclose the employment of various fillers inclusive of the inorganic and organic fillers, acrylonitrile copolymers, and glass microbeads of applicants' claims in the making of closely related foam preparations for the purpose of imparting their bulking and strengthening effects. Accordingly, it would have been obvious for one having ordinary skill in the art to have employed the additive/filler materials of Fuzesi et al. and Whinnery et al. in the preparations of Hayash, Jr. et al. for the purpose of imparting their bulking and strengthening effects in order to arrive at the products of applicants' claims



Art Unit: 1711

with the expectation of success in the absence of a showing of new or unexpected results.

The following arguments were set forth in the Office action dated 8/9/06:

Applicants' arguments have been considered, but rejection is maintained for the reasons set forth, again, above. The language of Hayash, Jr. et al. does not bar inclusion of additional catalysts from what is disclosed by the teaching of Hayash, Jr. et al., nor is Hayash, Jr. et al.'s full teaching limited by what is set forth in its claims. Additionally, the secondary references are not looked to for their teaching of this embodiment of applicants' invention, and, therefore, arguments as to the lacking of these elements in their disclosure is of little weight.

Examiner maintains the position combining the individual catalysts disclosed by Hayash, Jr. et al. to form a blended third catalyst which is then used within the preparations of Hayash, Jr. et al. to be properly set forth. That the formed third catalysts would then be used in the further work-up of the compositions of Hayash, Jr. et al. does not negate the position held by examiner. As indicated in examiner's rejection, the two catalysts are taught to be useable, are assumed to function properly, and a catalyst formed by a blend of these two functional catalyst would also be expected to be functional.

Applicants' statements at page 19 of their reply as to the function of their catalyst blends are not supported, in fact, by a factually supported showing of new or unexpected results which are commensurate in scope with the scope of the claims as they currently stand.

When considering showings of results, the following must be considered:

Result Must Compare to Closest Prior Art:

Where a definite comparative standard may be used, the comparison must relate to the prior art embodiment relied upon and not other prior art – *Blanchard v. Ooms*, 68 USPQ 314 – and must be with a disclosure identical (not similar) with that of said embodiment: *In re Tatincloux*, 108 USPQ 125.

Results Must be Unexpected:

Unexpected properties must be more significant than expected properties to rebut a prima facie case of obviousness. *In re Nolan* 193 USPQ 641 CCPA 1977.

Obviousness does not require absolute predictability. *In re Miegel* 159 USPQ 716.

Since unexpected results are by definition unpredictable, evidence presented in comparative showings must be clear and convincing. *In re Lohr* 137 USPQ 548.

In determining patentability, the weight of the actual evidence of unobviousness presented must be balanced against the weight of obviousness of record. *In re Chupp*, 2 USPQ 2d 1437; *In re Murch* 175 USPQ 89; *In re Beattie*, 24 USPQ 2d 1040.



Art Unit: 1711

**Claims Must be Commensurate With Showings:**

Evidence of superiority must pertain to the full extent of the subject matter being claimed. *In re Ackerman*, 170 USPQ 340; *In re Chupp*, 2 USPQ 2d 1437; *In re Murch* 175 USPQ 89; *Ex Parte A*, 17 USPQ 2d 1719; accordingly, it has been held that to overcome a reasonable case of prima facie obviousness a given claim must be commensurate in scope with any showing of unexpected results. *In re Greenfield*, 197 USPQ 227. Further, a limited showing of criticality is insufficient to support a broadly claimed range. *In re Lemin*, 161 USPQ 288. See also *In re Kulling*, 14 USPQ 2d 1056.

Applicants' assertions at page 19 of their reply and their submitted affidavit evidence fail to overcome the instantly held rejection in that they lack the necessary showing of new or unexpected results necessary to overcome the position of obviousness currently held. Applicants' have not persuasively demonstrated unexpected results based on the catalysts combinations of their claims in a manner which is commensurate in scope with the scope of their claims. Comparisons have not been made with the prior art embodiment relied upon. Applicants have not demonstrated their results to be clearly and convincingly unexpected and more than mere optimizations of the knowledge in the art or more significant than being secondary in nature.

Applicants' arguments concerning their process claims, including those at page 20 of their reply, have been considered. However, the differences noted have not been associated with features of the processes claimed, and these recitations in the claims do not substitute for fact based showings of new or unexpected results which are demonstrated to be commensurate in scope with the scope of the instant claims.

These arguments are maintained.

Applicants' latest arguments have been considered. However, rejection is maintained as proper for all of the reasons set forth above. Claims are not limited to the exclusion of blowing agent, distinction based on any exclusion of blowing agent is not seen, and applicants even have claims (see claim 17) which disclose water, a known blowing agent. It is maintained that applicants have not established non-obvious differences based on the process by which the products are formed, and the evidence

Art Unit: 1711

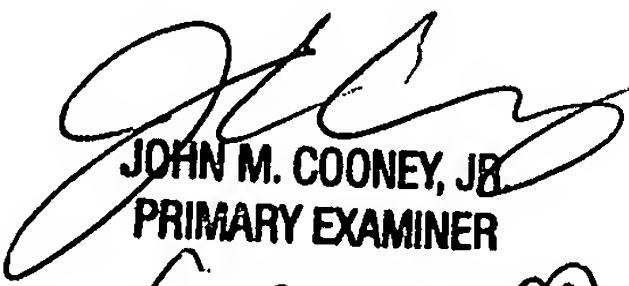
of record is clear that the compositions of the prior art are curable at temperatures above about 60 degrees Celsius. Combination of the teachings of the prior art in the manner set forth in the rejection above in order to arrive the dual, or greater, amine catalyst system of applicants' claims is maintained to be properly established and has not been rebutted by the evidence of record.

Applicants' affidavit evidence is noted. However, its relevance to limitations provided for by the claims is not seen nor has it been shown.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to John Cooney whose telephone number is 571-272-1070. The examiner can normally be reached on M-F from 9 to 6.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, James Seidleck, can be reached on 571-272-1078. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

  
JOHN M. COONEY, JR.  
PRIMARY EXAMINER  
Group 1700